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State Institutions In The Citrus Industry

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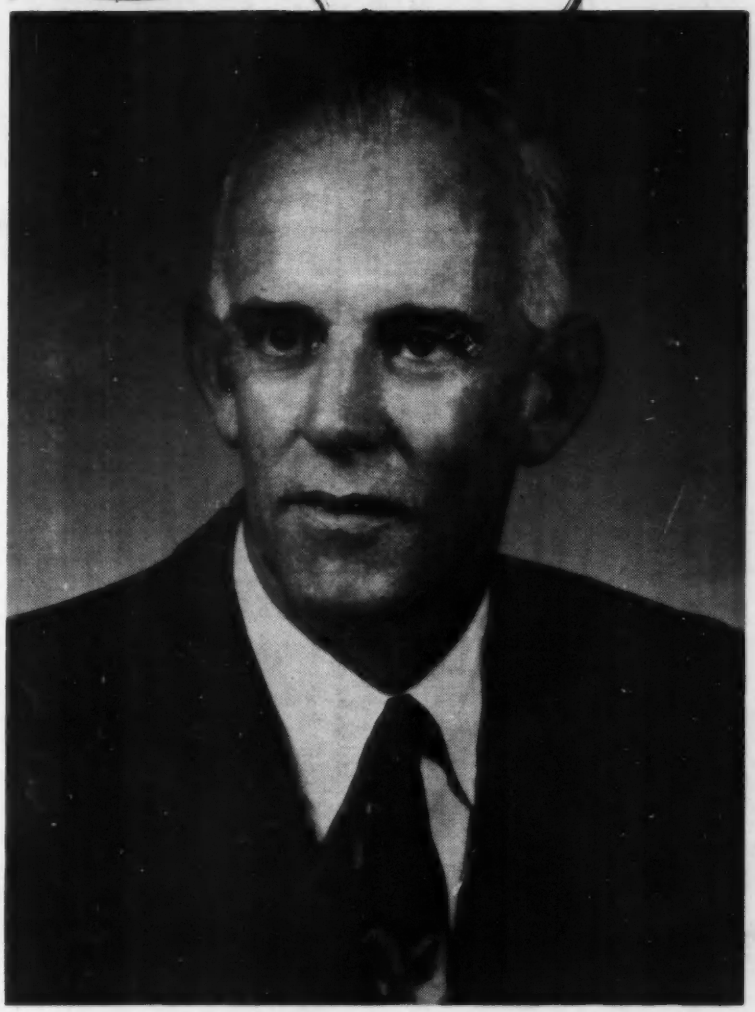
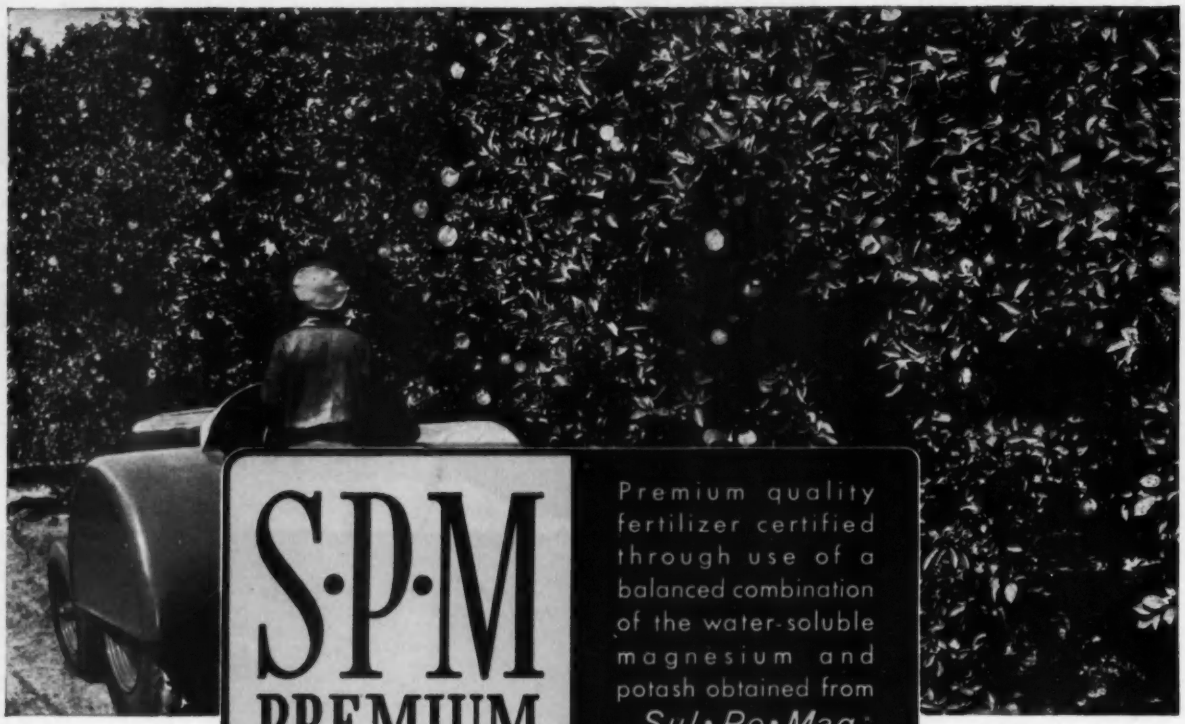


CHARLES D. KIME, JR.

Production Manager Waverly Growers Cooperative, Vice-President for Citrus, Florida State Horticultural Society. (See "Citrus Grove Caretakers" page 21)

VOL. 38 — NO. 9 SEPTEMBER, 1957 BARTOW, FLORIDA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R. M. Pratt

Citrus Insect Control

R. B. Johnson

For September 1957

R. B. JOHNSON*
R. M. PRATT
W. L. THOMPSON
Florida Citrus Experiment Station, Lake Alfred

W. L. Thompson

Resulting from the combined effects of spray programs and seasonal conditions, there was a substantial reduction in all the major citrus insects and mites during August.

Rust mite activity reached a peak at a record level the last week in July. Populations have been declining rapidly since and are now at a low level in most groves. An increasing trend will begin in September, leading to high populations in October and November.

Purple scale infestations are very low at this time but will start increasing about mid-September. Infestations will be above average in the fall and winter and will be high in the spring of 1958.

Red scale infestations will be comparatively low in September and through the fall and winter.

Purple mite infestations are at an all-time low, but will start increasing slowly in September and will be a little above average this fall. Texas citrus mites have been spreading since first discovered on citrus in Florida in 1951, and heavy infestations have become progressively more common.

Mealybugs have just about disappeared.

SPRAY PROGRAM

For the past several years it has been customary to remind citrus growers in this monthly article that September is an excellent time to check groves for pest infestations. This year is no exception in this respect because most of the summer scalicide spraying has been completed and we now have a slack period, as far as pest control is concerned, when we can take time to examine pest conditions. It is an ideal time to see what has been accomplished in order to plan a good program for the months to come.

It is wise to look for all citrus pests in checking groves, but this September it is advisable to spend more time checking for scale insects than for any other pest. The reasons for this are two-fold. First, purple mite and rust mite populations, with some exceptions, are expected to be at low levels during September; and, second, purple scale and chaff scale are likely to reinfest fruit in serious numbers during the late summer and early fall, especially where scalicides were applied before the middle of June. Such reinfestations should be controlled even if it means using a second scalicide because purple or chaff scales on early fruit, especially tangerines, will result in green spots around each scale. These spots are not removed in the coloring room and are a definite grade-lowering factor. Furthermore, too many live scales around the stem end of fruit can result in a costly fruit drop.

Growers should also be looking for red scale infestations because this scale can build up rapidly and result in severe leaf drop followed by dead wood. In checking for red scale, remember that this scale is seldom evenly distributed like purple scale, but occurs in parts of groves, on individual trees or even individual limbs.

Check for mites with the idea of determining where fall miticides will be needed first. Be sure to check tree tops and other areas that are difficult to reach with the average spray.

Scale Control: No oil spray of any kind is recommended for use on citrus after the middle of July because any known oil may depress the soluble solids content of fruit and retard degreening. These adverse effects are most pronounced with full-strength oil sprays (1.3 percent actual oil), but because the effect is about proportional to the amount of oil used, adverse effects may even result from the use of half-strength oil sprays (0.7 percent actual oil). Furthermore, two oil sprays have more effect than only one.

It is more important to avoid the use of oils during the late summer and fall of this year than it was during the past dry years, because the soluble solids content of the fruit can be expected to be lower than usual as a result of the wet weather we have had this spring and summer. There isn't any advantage in depressing solids even lower with oil sprays!

For these reasons it is recommended that parathion or malathion be used where a scalicide is needed this fall or winter. In groves where no scalicide has been used since before the middle of June or where scale infestations are high, use 1.7 pounds of

(Continued on page 11)

SCALE AND MITE ACTIVITY BY DISTRICTS*

District	Purple Scale	Red Scale	Purple Mite	Rust Mite on leaves	Rust Mite on fruit
West Coast	2.55	.38	.38	1.00	1.00
Indian River	3.11	2.50	.56	2.63	2.75
Upper East Coast	3.83	3.17	.17	1.67	1.50
Gainesville	1.00	.80	—.20	0	0
Orlando	4.25	1.20	.20	.34	.67
Brooksville	3.30	.33	.25	.73	1.27
Ridge	3.95	3.97	.94	1.36	1.58
Bartow	4.00	.83	.67	1.50	2.00
State Average	3.37	3.00	.47	1.27	1.50
Last Year	3.89	3.41	1.05	2.21	2.64

*Third week in August. Activity is computed from populations, amount of hatching of scales, and number of groves with increasing or decreasing infestations. Activity is considered high if above 4.0 for purple scale, 3.0 for red scale, and 1.5 for mites.

* Written August 22, 1957. Reports of surveys by Harold Holtsberg, Fort Pierce; J. W. Davis, Tavares; K. G. Townsend, Tampa; T. B. Hallam, Avon Park; and L. M. Sutton, Lake Alfred.

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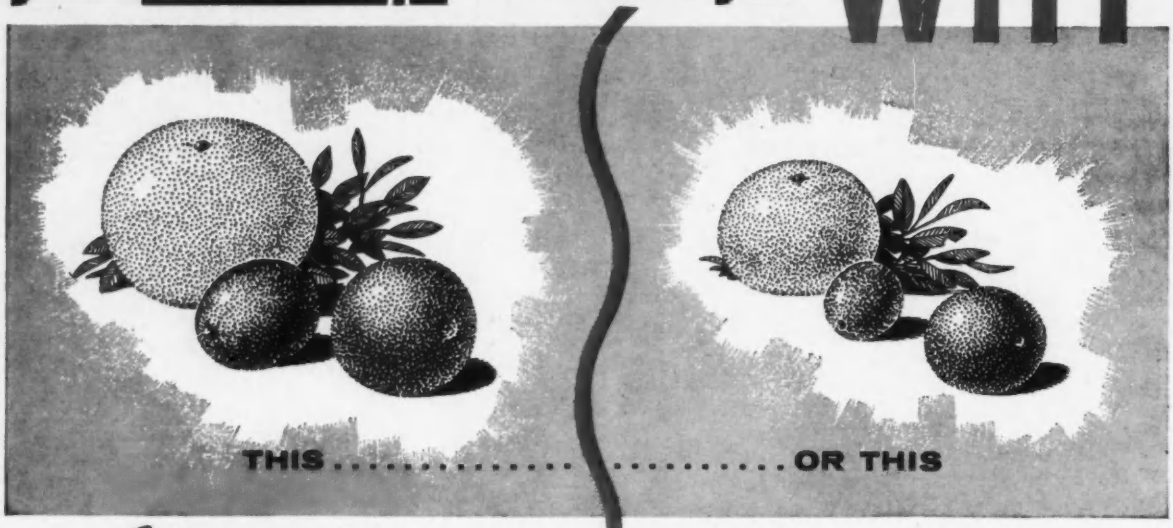

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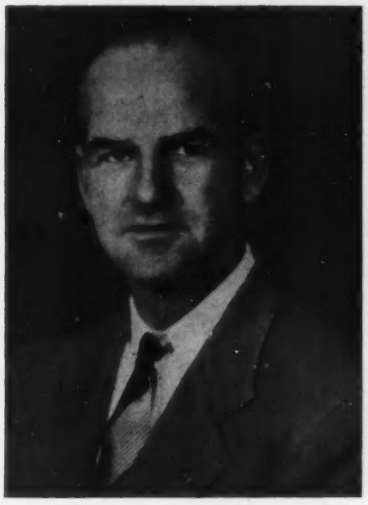
Florida State Horticultural Society Meets October 28-31

Dr. Ernest L. Spencer, Secretary of the Florida State Horticulture announces the 70th Annual Meeting of the Society at the Empress Hotel in Miami Beach on October 29 to 31.

The Florida State Horticultural Society for seventy years has been a vital factor in the affairs of the citrus growers of the State and is recognized as one of the greatest organizations of the kind in the nation.



DR. ERNEST L. SPENCER
SECRETARY OF THE SOCIETY

The officers, directors and committees of the Society have arranged a program of the utmost interest to Florida citrus growers and they are looking forward to one of the most successful meetings in the history of the Society. An exceptionally large attendance is anticipated.

Plans are nearing completion for the 70th Annual Meeting of the Florida State Horticultural Society, to be held at the Empress Hotel in Miami Beach, October 29-31st. The Society, organized in 1888, is one of the largest state horticultural societies in the country. It is the oldest horticultural group that has held continuous meetings since its organization.

The program this year listing nearly 100 speakers will include many of the top state and national research workers in the field of horticulture. The Sectional Vice-President will serve as chairman of the citrus, vegetable, ornamental, processing and Krome Memorial sections, respectively.

The guest speakers at the general session, as announced by Robert E. Norris of Tavares, President of the Society, will be Dr. W. T. Pentzer, Chief - Biological Sciences Branch of the USDA Marketing Research Division, and Dr. J. R. Beckenbach, Director - Florida Agricultural Experiment Stations.

The annual banquet will be held on Wednesday evening, October 30. Dr. Ralph L. Miller, Chairman of the State Plant Board and Vice-chairman of the State Board of Control, will serve as Toastmaster. Lyons H. Williams of Coral Gables will be in charge of all local arrangements. A full program is being arranged for the ladies.

CITRUS INSTRUCTION AT FLORIDA SOUTHERN

Florida Southern college at Lakeland will again present a course in CITRUS PACKINGHOUSE PROCEDURE in the evening community college for the autumn semester, Dr. J. A. Battle, dean, has announced.

Dr. Battle said that the three-hour course will be taught by Dr. W. Grierson, of the Citrus Experiment Station, Lake Alfred, by special arrangement with the University of Florida.

The course will be given on Thursday evenings beginning at 6:30 p. m. in Florida Southern's new Polk County Science Building.

Dr. Battle said that CITRUS PACKINGHOUSE PROCEDURES will cover all details of fresh fruit handling from harvest to the retail store. The latest developments in packinghouse methods in Florida and elsewhere will be covered along with traditional Florida citrus packinghouse procedures.

In addition, students will hear a discussion of the current status of color-added and the use of post-harvest fungicides plus a review of changes imposed by recent legislation and administrative rulings.

Registration and other details may be obtained at the office of Registrar E. A. Lilley in the Watson Administration Building, the Frank Lloyd Wright Campus.

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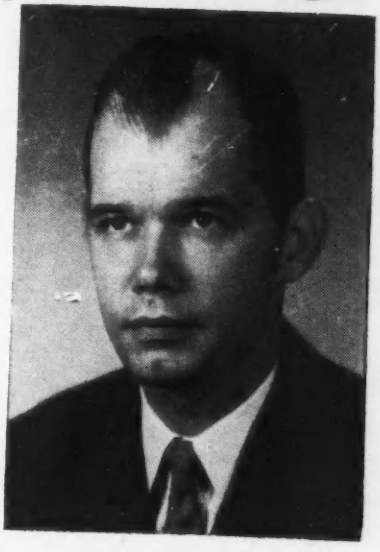
Policy Statement On Spreading Decline



JAMES T. GRIFFITHS*

In my remarks today, while I will outline for you the present status of the Spreading Decline Program, I will spend most of my time discussing with you the necessity for an unequivocal policy statement by the Florida State Plant Board.

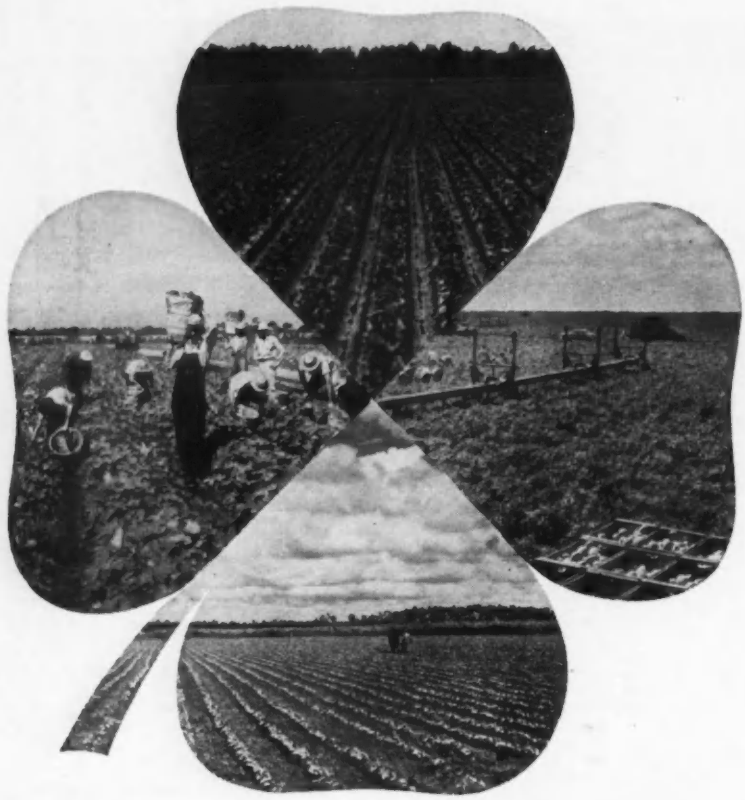
As most of you are already aware a bill was passed by the state legislature in late May, which appropriated funds for "Push & Treat" as well as for paying compensation on trees unaffected by burrowing nematodes. This bill directed the Plant Board to proceed with an eradication program. Although this act was passed in May and action was requested by Florida Citrus Mutual in a letter to the Plant Board members, nothing was done by the Plant Board at its June meeting. At their July meeting the Plant Board agreed to hold a public hearing on August 16th, but this was done only at the result of an urgent request by representatives of Florida Citrus Mutual. According to the notice for the hearing, it will consider policy, rules and regulations. The rules and regulations are spelled out in detail. They are based on research and appear generally to be sound and satisfactory. It is within the realm of policy that I wish to spend my time today.

During the past biennium approximately 3500 acres were pushed and treated and there is this much or more still to do. From May 1st through July 30th, only 53 new properties have been placed under contracts for pushing and treating. Approximately 1/3 of these are for the correction of the old margins.

The USDA was engaged exclusively in nursery survey work up to June 1st and were delayed in starting mapping procedures. This group will be expanded as necessary to maintain mapping procedures if and when a large scale program is started. However, today there are too few individuals, who are willing to proceed with "Push & Treat" on a voluntary basis and there is no policy for a compulsory program. In my opinion additional volunteers will be slow in materializing unless a sound policy statement is adopted so that growers will have some basis for anticipating the action which will be taken in the future. We need a long range policy if our present program of "Push & Treat" is to be successful and this policy must be unequivocally adopted by the State Plant Board.

Before any policy can be adopted it must be recognized that spreading decline is not going to cease being a problem at the end of the next two years, even though most of the affected citrus acreage in the state has been pushed and treated. We must face the fact today that much of the acreage under 10 years of age will develop symptoms of spreading decline during the next decade and it is virtually impossible to find these infestations today. Therefore, decline will be a continuing problem, but it should not be of

* Production Manager, Eloise Groves Association, Winter Haven, Florida. Presented at Camp McQuarrie on August 14, 1957.



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the emergency nature that faces us today, because the growers who will be affected can be on the lookout for the disease and be prepared to take the necessary steps as soon as symptoms become evident.

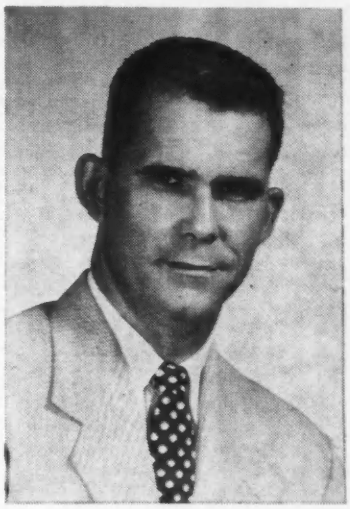
We must also recognize the fact that there probably are not sufficient funds to pay compensation as required by law and to push and treat all of the diseased acreage that remains in the state. Therefore, a policy must be adopted, which will obtain the maximum benefits for the citrus industry in terms of the removal of the largest acreage possible with the funds that are available. It is my feeling that state and federal monies should be drastically reduced when the state funds now budgeted have been spent. The major portion of the affected acreage should be removed within two years and it would only be necessary to maintain surveillance to be sure that the margins have been adequately handled. Within two years it is my feeling that the problem of spreading decline should become primarily the growers own responsibility with some technical assistance from the Plant Board and the USDA. Governmental responsibility should be confined to the correction of inadequately treated margins; to the identification of burrowing nematodes and the mapping of the infested properties; to the certification of nursery stock as free of nematodes in commercial citrus properties by the use of quarantine and police powers. These quarantines should require that a grower contain his own disease. This implies that it will be the growers responsibility to prevent spread to his neighbors and suggest that he should be financially liable for any damage to his neighbor's property. If the present plant act needs strengthening in order to accomplish this, steps should be taken by the Plant Board and by the Citrus Industry to obtain these powers at the next session of the legislature.

To be successful it is essential that the grower who volunteers be assured of complete protection from his infested neighbors. Only this past week I have received notice from the Plant Board that burrowing nematodes have been found on the margin of one of our pushed properties. It is found at two points which are immediately adjacent to the original source of this infestation in the grove next door.

(Continued on page 14)

How To Buy . . . An Irrigation System

PART I



S. E. DOWLING
ASST. EXTENSION AGRICULTURAL ENGINEER
U. OF F., GAINESVILLE

AT CITRUS GROWERS INSTITUTE, CAMP McQUARRIE

(Many Florida citrus growers are interested in the construction of irrigation systems for their groves. They will be interested in the paper presented at the Citrus Growers Institute at Camp McQuarrie, by S. E. Dowling, Assistant Extension Agricultural Engineer. The first section of this paper is presented herewith, and will be followed by other sections in succeeding issues of the magazine.)—Editor.

Irrigation in Florida is not something new. There are over 850,000 acres under some type of irrigation. Irrigation of farms, ranches and groves in Florida is being accomplished by sprinklers, perforated pipe, underground tile, furrow, overhead Skinner systems and several other methods. Water to supply these systems comes from deep wells, shallow wells, farm ponds, rivers, streams, lakes, ditches, canals and other sources. These differences in types of irrigation equipment and water supply makes the job of designing a proper and economical system a complicated process and should be done by a person with proper training and experience.

Florida is a humid state with an average rainfall in excess of 50 inches. Even though this rainfall is sufficient in quality its frequency and distribution is poor. There is seldom a year that one or two irrigations would not have been beneficial during the growing season of our crops.

An irrigation system in Florida is like an insurance policy; it always gives you protection against the limiting growth factor, moisture. If the farmers are protected against insufficient moisture at critical growth periods then farmers can plant for optimum production by using more plants per acre, more fertilizer and more labor saving equipment. This will insure the farmer of a bumper crop even though the rainfall is sufficient and no irrigation is needed. He is able to plant and produce more due to the fact that he had control of the moisture.

The farmers of our nation are being forced to strive for optimum production due to the tightening economy that is taking place in today's agriculture.

The question most often asked is whether the farmer can afford to irrigate or not. There can be only one answer to this question and that is, "When the annual cost per acre for irrigating any crop by any method of irrigation is less than the average anticipated returns from the irrigation of an acre of that crop, then the farmer can afford to irrigate."

Irrigation should be based on its ability to pay not cost. Under the above conditions, the purchase of an irrigation system would start paying dividends immediately.

The balance of this bulletin will be devoted to a method of determining an economical sprinkler irrigation system. This method with slight modification could be applied to systems other than sprinkler, or could be used to compare cost of two different type systems in order to find the one most economical. A farmer must know all the costs involved as well as the returns expected before buying an irrigation system.

Without applying cost figures to the design of an irrigation system, it is nearly an impossibility to properly design the most economical system for an individual farm. No two irrigation systems are the same; therefore, each must be designed for the job that it must do. An irrigation system is like a chain with many links; it is no stronger than the weakest point.

In order to design the most economical system for an individual farmer, rancher or grower, it is necessary that the design be based on an annual cost per acre figure. Only after this figure has been determined will the purchaser be in a position to know, not guess, whether he can afford to irrigate.

The annual cost per acre for irrigating takes into consideration all fixed cost such as cost of the equipment, cost of well drilling, land leveling, if needed, surface ditches, or any other equipment that might be needed to give you a working irrigation system. The average life of each of these components can be found in Table 1, "Suggested Depreciation Period for Components of An Irrigation System." After this is known, along with the rate of interest to be paid, it is then possible to look at Table 2, "Capital Recovery Factor," and obtain a figure which when multiplied by the cost of the component will give you the annual fixed cost for this part of the system.

Every component must be figured this way with the individual fixed cost added in order to obtain the Total Fixed Annual Cost. To this fixed cost we must add variable costs such as labor, fuel, repairs, maintenance and any other annual costs that apply to the system. This total will give the Annual cost for irrigating and can be divided by the number of acres irrigated to give an Annual Cost Per Acre figure.

The Annual Fixed Cost can be reduced but this does not necessarily mean that the Annual cost per acre will be reduced, usually the opposite takes place. The fixed cost is usually reduced by lowering the initial investment which can be done in several ways such as reducing pipe size, eliminating labor saving and safety

features, increasing the number of sets per day, poor land leveling, plowing furrow ditches farther apart, or some other method for reducing the amount of equipment to be purchased. Even though any of these reductions will decrease the initial investment they will also result in an increase in labor or fuel consumption or both. This usually causes an increase in the total annual cost.

What we must find is the proper balance between labor, fuel and equipment in order to design the most economical system to own and operate for the individual system that is being designed.

There is no definite step by step procedure for designing an irrigation system, but every designer must have certain information, such as would be required to fill in The Data Sheet under Figure 1. This Data Sheet, "Farm Information," must be used as a starting point in the design of an irrigation system.

The Data Sheet, Design and Specification Information (Figure II) should be filled out and supplied to the purchaser so that he will always have a record on hand that explains the system to him. Before this Data Sheet can be filled in completely it will be necessary to use the annual cost per acre method in order to be sure the selection of equipment is the most economical.

Most of the answers to the questions raised by this form can be easily and correctly supplied by the Irrigation Engineer; however, there are a few points that should be emphasized.

Under System Capacity Requirements (Figure II) we have a subheading, "Water Application Efficiency (Percent.)" Application efficiencies of 70 percent have been used as standards throughout most of Florida for both close and wide spacings, high and low pressures, and in most cases the same for various wind conditions as well as different temperatures and humidities. This percentage cannot be correct for all of these conditions. It is, however, possible to determine the application efficiency on the basis of the condition which the system is designed.

Frost and Schwalen have prepared a nomograph for determining percent evaporation and wind drift loses from sprinkler systems in Table 3. One hundred minus the percent evaporation loses would equal the initial application efficiency. This percentage could be used as the efficiency for design purposes if there were complete uniformity of distribution of the water applied. As there is something less than one hundred percent uniformity in distribution a measure of such uniformity is needed. This is possible and is being done at the present time by several sprinkler companies. The formula being used by these companies to find the uniformity coefficient, CU, of a given sprinkler head is:

BRAZIL HONORS ROLFS

An avenue in Vicosa, Brazil, has been named in honor of the late Dr. P. H. Rolfs, former dean of the University of Florida College of Agriculture, according to word reaching friends in Gainesville.

Dr. Rolfs was dean of the college and director of the Agricultural Experiment Station from 1906 to 1920.

TABLE 1
SUGGESTED DEPRECIATION PERIOD FOR COMPONENTS OF AN IRRIGATION SYSTEM*

Componant	Depreciation Period Years
Well	25
Pump	15
Power Units	
Diesel	15
LP-Gas	12
Gasoline, Tractor, Fuel, etc.	9
Air-cooled Engine, Gasoline	4
Power Units, Electric	25
Open Farm Ditches (permanent)	20
Concrete Structures	20
Concrete Pipe Systems	20
Wood Flumes	8
Pipe, surface, gated	10
Pipe, water works class	40
Pipe, steel coated underground	20
Pipe, aluminum, sprinkler use	15
Pipe, steel, coated, surface use only	10
Pipe, steel, galvanized, surface only	15
Pipe, wood buried	20
Sprinkler heads	8

*From Sprinkler Irrigation Association, 1955, "Sprinkler Irrigation".

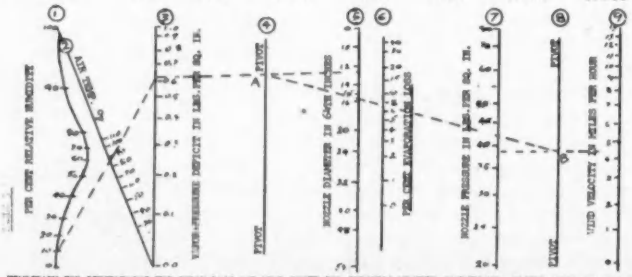
Some sources depreciate land leveling in 7-15 years, however, if proper annual maintenance is practiced, merely figure interest on the leveling costs.

Use interest on capital invested in water right purchase.

A new depreciation schedule should be developed, based on the percent of the total hours each component would be used each season. Its total number of years of service could then be more closely calculated, figuring some loss from storage. Such a schedule could be used for any area of the United States.

TABLE 2
CAPITAL RECOVERY FACTOR

Years	2	2½	3	3½	4	4½	5	6
1	1.0200	1.0250	1.0300	1.0350	1.0400	1.0450	1.0500	1.0600
2	0.5151	0.5188	0.522e	0.5264	0.5302	0.0340	0.5378	0.5454
3	0.3468	0.3501	0.3535	0.3569	0.3604	0.3638	0.3672	0.3741
4	.2626	.2658	.2690	.2723	.2755	.2787	.2820	.2886
5	.2122	.2153	.2184	.2215	.2246	.2278	.2310	.2374
6	.1785	.1816	.1846	.1877	.1908	.1939	.1970	.2034
7	.1545	.1575	.1605	.1635	.1666	.1697	.1728	.1791
8	.1365	.1395	.1425	.1455	.1485	.1516	.1547	.1610
9	.1225	.1255	.1284	.1315	.1345	.1376	.1407	.1470
10	.1113	.1143	.1172	.1202	.1233	.1264	.1295	.1359
11	.1022	.1051	.1081	.1111	.1142	.1173	.1204	.1268
12	.0946	.0975	.1005	.1035	.1066	.1097	.1128	.1193
13	.0881	.0911	.0940	.0971	.1001	.1033	.1065	.1130
14	.0826	.0855	.0885	.0916	.0947	.0978	.1010	.1076
15	.0778	.0808	.0838	.0868	.0899	.0931	.0963	.1030
16	.0737	.0766	.0796	.0827	.0858	.0890	.0923	.0990
17	.0700	.0729	.0760	.0790	.0822	.0854	.0887	.0954
18	0667	.0697	.0727	.0758	.0790	.0822	.0856	.0924
19	0638	.0668	.0698	.0729	.0761	.0794	.0828	.0896
20	.0612	.0642	.0672	.0704	.0736	.0769	.0862	.0872
21	0588	.0618	.0649	.0680	.0713	.0746	.0780	.0850
22	0566	.0597	.0628	.0659	.0692	.0726	.0760	.0831
23	.0547	.0577	.0608	.0640	.0673	.0707	.0741	.0813
24	.0529	.0559	.0591	.0623	.0656	.0690	.0725	.0797
25	.0512	.0543	.0574	.0607	.0640	.0674	.0710	.0782
30	.0447	.0478	.0510	.0544	.0578	.0614	.0651	.0727
35	.0400	.0432	.0465	.0500	.0536	.0573	.0611	.0690
40	.0366	.0398	.0433	.0468	.0505	.0543	.0583	.0665
45	.0339	.0373	.0408	.0445	.0483	.0522	.0563	.0647
50	.0318	.0353	.0389	.0426	.0466	.0506	.0548	.0634



NOMOGRAPH FOR DETERMINING THE SPRAY LOSS AND WIND DRIFT FOR SPECIFIC WEATHER CONDITIONS, NOZZLE SIZE AND PRESSURE. EXAMPLE GIVEN: THE PER CENT LOSS IS 8.5% FOR 3/16 INCH RANGE NOZZLES OPERATING AT 40 PSI NOZZLE PRESSURE WITH A WIND VELOCITY OF 5 MPH WHEN THE RELATIVE HUMIDITY IS 30 PER CENT AND AIR TEMPERATURE IS 90°F. IF A 3/16" X 1/8" SPRINKLER HEAD WERE USED WITH SPREADER PINS, A NOZZLE SIZE ONE-HALF WAY BETWEEN THE 2 NOZZLES SHOULD BE SUBSTITUTED WHICH WOULD BE 5/32 INCH. WITHOUT PINS THE ERROR WOULD BE NEGLIGIBLE IF NO CORRECTION FOR THE SMALL NOZZLE WAS MADE.

From Frost & Schwalen, U. of Ariz.

TABLE 3 - EVAPORATION AND WIND DRIFT LOSSES

(Part Two Will Appear In Next Issue)

CITRUS INSECT CONTROL FOR SEPTEMBER, 1957

(Continued from page 3)

15 percent parathion or its equivalent in other formulations or 5 pounds of 25 percent malathion per 100 gallons. If a previous scalicide has been used or if scale populations are at moderate levels, the reduced dosages of 1 pound of 15 percent parathion or 3 pounds of 25 percent malathion should be adequate. Regardless of the scalicide, good control can be expected only with thorough coverage applied before scale populations reach very high levels.

Rust Mite Control: There are two very good reasons for controlling rust mite at all times. First and most important, this mite russets fruit. Although it is true that rust mite is more likely to russet fruit during the summer months, it can become numerous enough to cause russetting at any time. Furthermore, rust mite can cause a severe leaf drop. For these reasons, it is foolish to ignore high populations of rust mite regardless of the spray program.

The most effective of the sprays recommended for rust mite control is the combination of 1 gallon of lime-sulfur plus 5 pounds of wettable sulfer per 100 gallons of spray. This mixture may be used in combination with parathion although 5 pounds of wettable sulfur without additional lime-sulfur should be adequate for rust mite control in parathion sprays.

Since lime-sulfur is more likely to cause a fruit burn than wettable sulfur, it is advisable to use 10 pounds of wettable sulfur per 100 gallons on tangerines and other varieties destined for the fresh fruit market.

Sulfur dusts are also effective, although less effective than sprays.

The newer material, zineb, although not yet recommended for general use, has given excellent and long-lasting control of rust mite at 1 pound per 100 gallons. Thorough coverage is needed for best results.

Purple Mite Control: Although purple mite and Texas citrus mite may become numerous enough in some groves to cause severe graying of leaves, it is recommended that miticides be used for their control during September only if excessively dry conditions develop or if trees are in a weakened condition for other reasons. This recommendation is based on the idea that mites will not cause much severe damage during September unless trees are also suffering for water and upon the fact that only oil sprays can be expected to give consistently good results at this time.

If mite control is absolutely necessary, either 45 percent aramite at 2/3 pound per 100 gallons or Systox at 1 pint are recommended. Since ovex should be used only once a year, it is recommended that the use of this material be postponed until winter when it will be more effective.

Details of spray schedules and the various materials used will be found in the "Better Fruit Program" and this should be consulted to determine which materials may or may not be combined. For further information, consult the Citrus Experiment Station at Lake Alfred or Fort Pierce.

More and more people are buying milk in half gallon containers.

FARMERS SHOULD APPLY FOR GAS TAX REFUNDS BEFORE SEPTEMBER 30TH

Florida farmers should file applications now for refunds on federal gasoline taxes, since the final date for filing is September 30.

According to Dr. C. C. Moxley, associate economist with the Florida Agricultural Extension Service, farmers will be entitled to a refund of three cents a gallon on all gasoline bought for farm production purposes for the 12 months ended June 30.

Dr. Moxley says refunds will not be made by the International Revenue Service unless farmers ask for them.

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State Institutions...

In The Citrus Industry

Benjamin Franklin once said, "If a man empties his purse into his head, no man can take it away from him. And investment in knowledge always pays the best interest."

The following is an accounting of the way in which the State of Florida, and particularly the citrus industry, is emptying its purse into its head or spending money for education and research which has, is, and will pay ever-increasing dividends.

The State Board of Control of Florida is responsible for examining the needs of all of the universities and making these known to the legislature. The State Board of Control is responsible for policy matters in the operation of the university system in Florida. As prospective college students gradually increase, the demands for facilities for higher education become greater. For this reason it has been necessary to check applicants for the state universities more carefully to be sure that all deserving and serious minded students have an opportunity to attend. A plan has been worked out, we believe, that will let everyone who desires, educate himself to the limit of his ability.

The University of Florida at Gainesville is probably the most complete instructional and research unit in the southeastern part of the United States. At present, or during the last year, there were almost 11,000 students.

The diversity of instruction which includes all phases of academic training, along with the College of Law, and a Medical College and Health Center, is as complete as can be found anywhere in the United States.

There was appropriated for the general educational budget at the University of Florida for the next two years, $22,225,530.00. For the operation of the Health Center, there was appropriated $7,015,-217.00. There was also requested, on a priority basis for buildings, general education at the University of Florida, $6,332,500.00; and requested for the Health Center, $1,451,-000.00 for a Department of Pharmacy. This money is to be spent on a priority basis, however, and will be spent as available for the buildings of greatest need.

DR. RALPH L. MILLER
CHAIRMAN
STATE BOARD OF CONTROL
AND STATE PLANT BOARD

AT MEETING
CITRUS GROWERS INSTITUTE,
CAMP McQUARRIE

In Tallahassee, the Florida State University (slightly smaller than the University of Florida), but equal in quality and academic standing, last year had some 7,000 students. For the operation of this university, there was appropriated $15,397,284.00—with building requests of $4,314,-466.00.

In Tallahassee, also, is the Florida Agricultural and Mechanical University for Negroes, which is as good an institution of higher learning for Neroes as any in the country. Facilities are available here for the complete education of Negroes to the extent of thir academic ability. For this group of some 3,000 students, there was appropriated $6,233,158.00—with requests for additional building and facilities of $3,174,750.00.

We are very proud to say that at the last session of the legislature, there was appropriated money for a fourth 4-year degree granting university to be established near Tampa at Temple Terrace. For this, there was appropriated $170,000.00 for operating expense to start the organizational work; and for the buildings in the next biennium, $8,602,-000.00.

It gives me great pleasure to call to your attention the fine system of universities under the jurisdiction of the Board of Control in Florida. We should also call attention to the fact that during the past two years, sites for additional university facilities have been offered, approved by the Board of Control, recommended to and accepted by the Board of Education, for a university in Southern Palm Beach County—near Boca Raton—and in Escambia County—near Pensacola. The great generosity of the citizens in these areas has made these sites available; and the clear and far-sighted thinking of the Board of Education, has allowed them to be accepted for use when needed at the discretion of the Board of Control, the Board of Education, and the legislature.

We have reviewed the educational facilities of Florida to familiarize you with the opportunities offered for the basic training in sciences and knowledge that contribute to the success of the citrus industry. Without basic and fundamental knowledge of science, mathematics, and practically all other phases of education, the citrus industry could not prosper in Florida.

It should be called to your attention that all of the agricultural experiment stations in the State of Florida are under the jurisdiction of the University of Florida. All of you are familiar with the fact that the main experiment station is at Gainesville, Florida—and branch experiment stations have been established in those areas of the state where production problems are peculiar to that crop or area. This has resulted in an excellent network of research workers scattered throughout the state in close proximity to the problems on which they work.

For the operation of the Agricultural Experiment Stations for the next biennium, there was appropriated $7,707,912.00. There was an additional request for buildings of $810,000.00.

Since you folks are especially interested in the Citrus Experiment Station, we should state further that for the some 117 workers at the Citrus Experiment Station, there was

appropriated approximately $1,500,000.00 for the next biennium. While this sounds like a large sum of money compared to the gross value of the citrus crop, it actually amounts to about one-fourth of one per cent.

The Florida Agricultural Extension Service is also under the direction and supervision of the University of Florida. To gain knowledge by research without distributing it, would be useless. The duty, as you all know, of the Extension Service is to distribute accumulated information. This meeting itself is made possible by the Extension Department of the University of Florida. For this work for the entire state for a two year period, there was appropriated only $2,194,574.00—with a very modest building request of $21,606.00 for some demonstration poultry buildings.

One new item in this year's appropriation, and one which at the present time is very popular, is a specific appropriation for atomic energy research and education. For this there was appropriated $5,200,000.00 to be divided between the University of Florida, Florida State University, and Florida A & M University. This work, as you know, will assist in the education of students and in research development which we hope eventually will provide a more economical source of heat and power for Florida than we now have. Tremendous achievement has already been accomplished by workers at the University of Florida in the use of trace elements in the feeding of cattle and growing of crops. The development of our own facilities in Florida for atomic energy research will enable us to expand this work and do similar work at other institutions.

As most of you know, the Florida Board of Control is also the State Plant Board of Florida. This organization is the "watch-dog", or protector, of the agriculture of Florida. It has as its duties the protection of Florida agriculture from outside pests, and the certification of agricultural plants and crops which move out of the state to insure our neighbors that we don't ship them some pest or disease they do not already have. Being a regulatory organization, its duties are often controversial. If it were not for the State Plant Board of Florida, each state or country to which we ship agricultural crops would have their own regulations against the movement of Florida crops and plants, and the regulations would be unbearable. By having our own regulatory group which is able to work out quarantine regulations—both with the adjoining states and the United States Department of Agriculture—we can fascilitate the ready and easy movement of our own products.

Much technical information must be used by the Florida State Plant Board. For this information, it draws very heavily, and sometimes almost completely, from the Florida Agricultural Experiment Station. For this reason, a very close working arrangement is necessary between the Florida Agricultural Experiment Station system and the Florida State Plant Board. This very close cooperation has been insured for many years by the fact that the Florida State Board of Control, which has jurisdiction over the Agricultural Experiment Station, is the same board

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that acts as the State Plant Board.

One particular problem of the State Plant Board at present is the Spreading Decline caused by the burrowing nematods. A program of containment, or area eradication, is under way at present. There was appropriated for this work, $1,500,000.00 for the next biennium—of which $119,000.00 is specifically designed for research in order to prevent the reinfestation of the young groves that are re-set in the treated areas.

Another specific problem given to the State Plant Board by the last legislature is that of control or eradication of the Fire Ant in areas in North and West Florida.

For the Fire Ant work, there was appropriated $550,000.00 for the next biennium. It is expected that the U. S. Department of Agriculture will cooperate with Florida and the other southern states in this work.

We have given an accounting of some of the duties of the Florida State Board of Control and the Florida State Plant Board. We have mentioned many figures of expense. If you were to add the total salary and current operating expense for the biennium for the next year for all of the colleges under the direction of the Board of Control for the experiment station and extension work and for the State Plant Board, the total would amount to approximately $70,000,000.00. There were additional requests as money was available and as the need could be satisfied for buildings amounting to approximately $30,000,000.00 for the next biennium. If these two figures are added together, it will be approximately $100,000,000.00 to be spent for the next two years for the education of the next generation of students and for the complete research and development program of the State of Florida. This, ladies and gentlemen, sounds like a large sum of money. First of all, it needs to be divided by two so that per year, it amounts to $50,000,000.00 for the state. You will recall, I am sure, that you pay your taxes on an annual basis. It has recently been called to our attention that there are some 4,000,000 residents in the State of Florida. This expense of $50,000,000 which supplies us with educational facilities at the college level and does the research and extends the knowldge of research to interested groups, and at the same time protects Florida agriculture from outside pests and allows our agricultural crops to move freely—pro-rated among the 4,000,000 residents from whom it must be collected—it amounts to only $12.50 per person per year. If this were to be broken down further, on a weekly basis, you can buy the educational facilities now offered in Florida and all the other attendant benefits for 25 cents per week, which in the opinion of the Chairman of your Board of Control and State Plant Board, is very economical.

POLICY STATEMENT ON SPREADING DECLINE

(Continued from page 8)

The owner of this property has shown no interest in the "push and treat" program. We are continuing to pay the penalties for his negligence and for the lack of a positive Plant Board policy. It is essential that all growers be assured that this will not happen when they agree to push without compensation.

It seems logical to me that our present program of "push & treat" might well be coupled with some sort of barrier procedure for those properties which are isolated; for those properties which can be shown to be reasonably profitable; or for some other special set of circumstances. I assume that a satisfactory barrier be erected although I recognize that it has not been done to date. It would be my suggestion that a barrier procedure be used for those growers who for good reason do not wish to have their entire affected property removed, but who recognize their responsibility to contain the nematodes within their own property and to prevent its spread to neighboring groves. In these cases it would seem to me that the Plant Board could well afford to pay for the initial "pushing and treating" of the margin, but that the grower in return would sign a contract whereby he agrees, in perpetuity, to maintain the barrier as prescribed by Plant Board regulations so that he will not serve as a source of infestation for his cooperating neighbor. I would like to close by reading for you a suggested policy statement. I am sure that someone could write a better one, but I think it is essential that some similar policy be adopted if we are to proceed to a successful conclusion with our present spreading decline containment program. I trust that you people will lend your influence to get our State Plant Board to take a positive and definite stand on some such program.

A Policy For Spreading Decline

Whereas, Spreading Decline is the most serious grower problem confronting the Citrus Industry of Florida today; and

Whereas, the 1957 session of the Florida State Legislature made funds available for and authorized the State Plant Board to proceed with a "push & treat" program in order to eradicate, wherever possible, burrowing nematodes from citrus groves; and

Whereas, it is recognized by the Florida State Plant Board that the primary purpose of the Spreading Decline program is to eliminate the disease in those areas where it is practical so to do and to contain the disease within its present boundaries in those areas where for special reasons eradication is not deemed feasible or desirable; and

Whereas, it is recognized that even with the best program possible there will continue to be new discoveries of burrowing nematodes in groves for at least 10 years as a result of setting infested trees as resets or as new groves; and

Whereas, funds are probably insufficient to pay compensation and also to push all groves with spreading decline, the Florida State Plant Board hereby resolves that the following outlined policy will serve as a basis for prodeeding, in cooperation with the USDA, with its containment program for Spreading Decline.

OBJECTIVES: Within the present biennium eradicate, where practical, known nematode infestations in commercial citrus; vigorously enforce nursery regulations; and take steps to prevent the spread of the nematodes from suburban areas and within city limits into commercial citrus acreage, with the firm intent that the problem of burrowing nematodes may be so diminished as to become primarily a grower, instead of a governmental, problem after July 1, 1959.

PRIORITY FOR "PUSH & TREAT" PROGRAM:

Grade A priority (to be done **immediately without** delay)

1. Growers who volunteer to have trees pushed.
2. The correction of margins where pushing has already been accomplished.
3. The establishment of buffer areas around those properties where "push & treat" has already been consumated

and which are still threatened by infested adjacent property; and also about presently uninfested property which is threatened by infestation across the property line.

Grade B. priority:
Those growers who because of financial hardship should receive compensation as intended by the Legislature.

Grade C. priority:
Those growers who will permit pushing if compensation is paid.

Grade D priority:
Growers who actively oppose "push & treat" even though compensation is paid. (In these grove barriers will have to be used in many places to prevent spread now.)

HARVESTING DELAY: Permit growers with early or mid-season oranges and/or grapefruit to pick the present crop on or before January 1, 1958. If more than 15% of any crop is of the Valencia variety, delay the pushing date until after April 1, 1958. After that date no further delay in pushing will be granted. All growers now known to have spreading decline will be so notified by registered mail not later than November 1, 1957, so that they will not spend money to produce a crop in 1958.

START OF COMPULSORY PROGRAM: Delay the start of the compulsory phase of the program until after February 1, 1958, except in those areas which threaten adjacent uninfested properties or properties already pushed and treated. Barrier zones will be erected in these areas immediately.

LONG RANGE PROGRAM: Look forward on a long range basis to a continuing program in which the Plant Board will quarantine properties with spreading decline and will carry out nursery inspection and certification; in which the USDA will offer mapping and survey facilities to those growers who require such service; and in which the grower with spreading decline must bear the expense of "push & treat" and be legally and financially liable for any spread of the disease from his property into that of his neighbor.

Each year insects, disease, fire, and other destructive agents kill an amount of saw timber equal to one-fourth the annual growth, says the United States Department of Agriculture.

Florida Citrus Growers To Vote On Amendments

Florida growers of citrus fruits will be given an opportunity soon to vote in a referendum on proposed further amendments to the marketing order regulating the handling of Florida oranges, grapefruit and tangerines, the U. S. Department of Agriculture announced today.

Identical amendments to the amended marketing agreement for Florida oranges, grapefruit and tangerines also are being submitted to the handlers of such fruit for their approval or disapproval.

The proposed amendments are the same as those recommended by the U. S. Department of Agriculture July 10, 1957, on the basis of evidence obtained at a public hearing at Lakeland, Florida, February 25-26, 1957.

The principal amendments recommended would (1) add tangelos as a fruit subject to regulation under the program; (2) extend regulations to cover all exports and shipments to intrastate markets beyond the road-guard stations; (3) authorize separate grade, size, condition, and container regulations for fruit exported to destinations other than Canada and Mexico; (4) permit the establishment of minimum standards of quality and maturity when prices exceed parity; (5) revise the provisions relating to inspection; and (6) clarify the scope of the present exemption covering fruit shipped for conversion into by-products.

The period during which the referendum and poll will be conducted has been set to begin September 7 ending September 14. Ballots will be mailed to all growers and handlers on record and a supply of grower ballots will be furnished each County Agent, which may be obtained upon request by any grower not receiving a ballot by mail.

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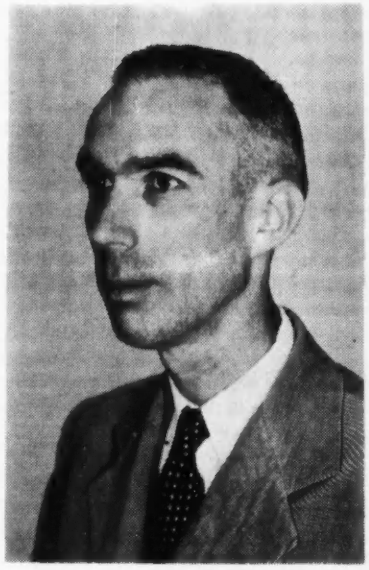
FLORIDA CITRUS EXPERIMENT STATION, LAKE ALFRED
AT MEETING
FLORIDA STATE HORTICULTURAL SOCIETY



E. L. MOORE

(Concluded From Last Issue)

Much more information is needed before such characteristics as flavor or degree of bitterness in grapefruit may be subject to control by the grower through cultural or other practices. However, growers can control to some extent the acidity in grapefruit by arsenation; also fertilizer constituents, such as potash, have an effect on this characteristic. Therefore, growers can do something about the production of grapefruit with a low acid content or high Brix/acid ratio, which is desirable for producing processed products of good quality and especially those that will not be sweetened by the addition of sugar. It is realized that problems are encountered when arsenation is used, but such treatment provides the principal method for the production of less tart or sweeter grapefruit either early in the season or during mid-season. Regardless of the cultural practices used, it is very important that growers do not harvest the crop until the fruit has reached its optimum maturity and a desirable Brix/acid ratio obtained for the specific use for which it is intended.

Since the internal quality of the fruit is one of the major factors that determines the quality of processed products, processors should obtain and use only the kind of grapefruit that is needed to produce products of good quality. During the past season most of the concentrators, who packed frozen grapefruit concentrate, made an effort to obtain fruit of better internal quality than that previously used; this was done following recommendations of the Quality Advisory Committee of the Florida Canners Association and surely was a step in the right direction.

Some incentive to the grower for the production of grapefruit of good quality would be provided if processors found it economically possible to pay for grapefruit on the basis of its internal quality, as they are now doing for the procurement of oranges of high solids content for frozen orange concentrate.

Processing procedures and technique determine to some extent the culture of all processed citrus products. For example, the degree of bitterness in canned grapefruit juice or frozen concentrate may be varied by juice extracting and finishing procedures. During the past season some processors have decreased the bitterness in packs of canned grapefruit juice and frozen concentrate by voluntarily making changes in extracting and finishing procedures, even though such changes resulted in a decrease in the yield of juice. Such efforts are to be commended and should result in an increased demand for these products of better quality. Thermal stabilization of grapefruit juice used in the production of frozen concentrate has been found to be necessary to prevent gelation and clarification in this product during distribution and storage. Adjustment of the amount of peel oil in frozen concentrate is also necessary for desirable intensity of flavor and to help prevent the occurrence or the detection of "oxidized" off-flavors that may occur during frozen storage. Unsweetened canned grapefruit juice and unsweetened frozen concentrate should be made only from fruit that is fully mature and from juice which has a Brix/acid ratio within the range that has been shown by various surveys to be acceptable to consumers. When sweetened products are packed from low ratio fruit, excessive amounts of sugar should not be added since dilution of the flavor in the product will result. All processed grapefruit products should be stored under conditions which will minimize changes in flavor that occur if the temperature and time of storage are too great. Storage of canned grapefruit juice and sections at temperatures lower than 80°F. if possible, is advisable and frozen concentrate should be stored at 0°F. or lower.

It is hoped that this brief discussion will help growers to understand some of the problems involved in the production of processed grapefruit products of good quality and to realize that the production of products which will be acceptable to most consumers, depends to a great

(1) Cooperative publication by the Florida Citrus Experiment Station and the Florida Citrus Commission. Florida Agricultural Experiment Station Journal Series No. 564.

extent on the internal quality of the grapefruit which the processor uses.

Summary

Statistics presented show that canned grapefruit juice, canned blended juice, canned grapefruit sections, and frozen concentrate are the principal products into which Florida grapefruit are processed. About 48 percent of the grapefruit crop was used during the 1955-56 season in these and other processed grapefruit products.

Research investigations concerned with factors, such as bitterness, acidity, flavor and stability, that affect the quality of processed grapefruit products are briefly discussed.

In order that improvements may be made in processed grapefruit products, it is suggested that growers produce fruit of such internal quality that most of it can be processed into products of good and acceptable quality; also, if possible, that grapefruit which will not be sold as fresh fruit should be produced with internal quality suitable for use in one or two specific processed products. It is suggested that processors use only fruit of such internal quality that will result in the production of products of good and acceptable quality; that processing procedures which affect quality be carefully controlled and that processed products be stored at all times under optimum conditions for maintenance of their initial good quality.

Complete utilization of the Florida grapefruit crop should be possible through the sale of fresh fruit and processed grapefruit products of good quality, together with the diversion to the production of citrus by-products or other uses of all fruit that cannot be used for these purposes because of poor internal quality.

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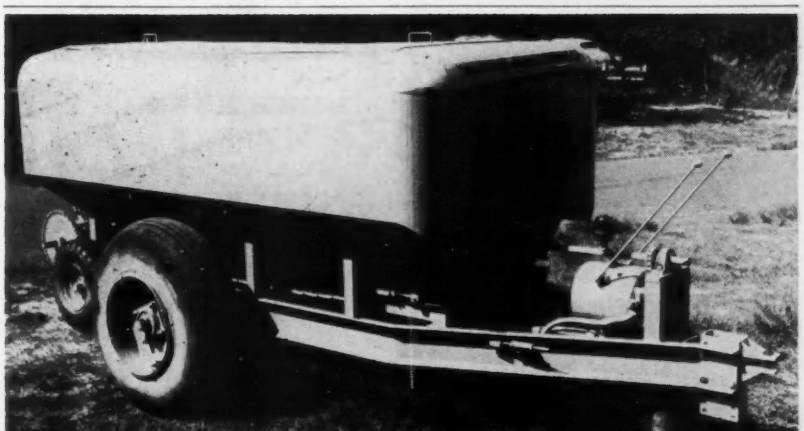

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A Long-Range Look At The Orange Situation

MARSHALL R. GODWIN
DEPARTMENT OF AGRICULTURAL ECONOMICS

In 1945-46 Florida produced 49.8 million boxes of oranges. The last estimate for the 1956-57 season stands at 93.3 million boxes. The difference between the production in the two seasons is a resounding 43.5 million boxes of oranges. In the twelve year interval, Florida producers have accomplished the incredible feat of increasing the size of the orange crop at an annual rate of 4.3 million boxes. While groaning under the burden at times, the marketing system has succeeded in matching the accomplishments of producers. The ever-mounting annual supply of oranges has been marketed with success, and indeed, profit to both the producers and the marketing agencies.

Do we have a limitless capacity to produce oranges? At prices near those which have prevailed during the past decade, it is not difficult to visualize a continuing rise in the flood of orange production, and a succession of record crops in years ahead. What, then, can the orange producer in Florida expect in the long run? Does he operate in the fortuitous climate of an economic paradox—where, given ingenuity and imagination, profitable markets can be found for a supply of any magnitude? It is about these questions that this discussion is concerned.

In view of our apparent willingness and capacity to produce successively larger orange crops, it is most appropriate that we examine the economic position of the Florida orange producing industry from the truly long-run point of view. At the outset of this examination, however, it is important to recognize that orange production takes place in a competitive economic situation. Anyone with capital and the fortitude to venture it can enter into the production of oranges. Likewise, anyone who despairs of profits or discovers more lucrative alternatives for his capital elsewhere is at liberty to with-draw. This condition of freedom of entry and exit is highly relevant to a long-run analysis of the situation.

Within this competitive economic framework, let us examine the position and the behavior of the individual producer. After all, it is the collective actions of these individual producers which determine the size of our orange crop. The goal of the individual producer is, of course, profit—maximum profit. And how does he obtain this maximum profit. An immediate reaction to this question may be that he does so by producing as efficiently as possible. But, efficient management, as measured by cost of production, by no means tells the whole story. A grower may have the lowest cost of producing oranges in all the industry and still not have the most profitable groves. The reason is that the true test of his success as a producer is the amount of money he makes—and this involves not only his cost of producing a box of oranges but also the number of boxes he produces as well. The truly efficient grower attempts to increase his output up to the point at which the last box of fruit which he produces just pays for itself. That is, up to the point where the cost of producing another box of fruit is more than what he expects to receive from it. This is the only point at which maximum profit can be realized. This point may be, but is more likely not, the point at which the average cost of producing a box of oranges is the least. In economic terms this is referred to as the point at which the marginal cost of production is equal to the marginal revenue.

The idea of producing up to the point at which marginal cost equals marginal revenue is a frequently misunderstood concept that is extremely important to the Florida orange producer. In the interest of clarity, let us examine exactly what it means. Suppose that on a particular grove a grower was able to produce 250 boxes of oranges per acre at an average cost of 50 cents per box (or a total outlay of $125 per acre), and that this was the lowest possible cost at which he could produce. Now, let us suppose further that the market price he might reasonably expect for this fruit was $1.00 per box. Would this grower make the most money if he concentrated on producing at this lowest possible cost of 50 cents per box? The answer is no—it would pay him to increase his production, even though his average cost per box would rise in the process. Let us assume that this grower could produce an extra 100 boxes of fruit per acre at a cost of 70 cents per box. The cost of producing this extra 100 boxes would then amount to $70.00, but for this extra quantity he would receive $100.00. His average cost per box for producing 350 boxes per acre would be higher (56 cents) than his average cost of producing 250 boxes, but his profits would be increased by $30.00. Our grower would continue to find it profitable to increase his per acre rate of production until the last few boxes he produced cost him $1.00 per box. The truly efficient grower will not concentrate upon producing at the lowest possible cost, but upon producing at the cost which will yield the maximum profit to him for his efforts. This in no way means that the grower can afford to ignore his

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average cost of production. He should continue to strive for the lowest average cost at the rate of production that is the economic maximum on his grove, but not for the lowest cost at which it is possible for him to produce.

The level of production which will bring maximum profit to the grower is far from stable. It should be readily apparent that our hypothetical grower would go much farther up the cost scale in order to increase his production if the price he expected were $2.00 rather than $1.00 per box. Conversely, he would attempt to contract his production as the price fell below $1.00 per box.

Thus, on any given acreage of citrus, we are confronted with the possibility of substantial changes in supply to conform with short-run price expectations. In periods of relatively high prices, growers will redouble their efforts to produce more fruit on bearing groves. If prices decline, economic forces will dictate a reduction in the amount that is spent for sprays, fertilizer and cultivation.

Growers in Florida will probably never have sufficient information to become highly accurate in determining the correct level of input of the production factors to maximize their profits. But, they have and will continue to strive for the greatest accuracy possible. Continuing adjustment to the end of producing so that the cost of the last few boxes of fruit approximates the price that they will bring is the only way that the individual producer can maximize his returns from a given acreage of grove.

A producer cannot afford to proceed beyond the point at which the maginal cost of production is equal to the marginal revenue obtained. To do so would decrease his returns. If, however, he finds the production of oranges a relatively profitable venture, he can and likely will expand his production further by increasing his acreage. Even if existing growers did not expand, the favorable returns will attract new capital and new growers and the expansion will still occur. The acreage of orange trees in Florida has increased annually for 35 years. While the rate of increase in acreage has varied greatly, this is ample testimony to the fact that people have, historically, found the production of oranges a profitable business. Acreage will continue to expand as long as the price of orange remains at levels that will bring relatively favorable returns to the producer for his invested capital.

Producers will not stop with the utilization of only the best citrus land. To do so would be a mistake equally as great as concentrating upon producing at the lowest possible average cost per box without considering the number of boxes that could be produced at this cost. We have already seen the expansion of orange production into areas that were once regarded as unsuitable. Gradually, but with near certainty, continued favorable returns will result in expansion into less and less desirable areas. Cost of production in these areas will be higher and it will become progressively more difficult to make a profit. Eventually, acreage will expand until the economic limit is reached. Producers with groves on marginal lands will find it difficult to break even, and will conclude that there is little wisdom in spending money to bring

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even less desirable areas into production. At this point they will look to other entrprises as more profitable places to invest their capital.

With competitive conditions and freedom of entry, the conclusion that we will ultimately have some acreage in oranges that will consistently fail to show a profit is inescapable. The prospect that this may happen may be viewed by many as an alarming situation. Actually, this condition is characteristic of any fully developed segment of our economic society. It holds few ill consequences for the producer who has none or only a small share of his total acreage that is on the economic margin if overexpansion can be avoided.

The most serious aspect of the long-run situation is the possibility of overexpansion in orange production. Timely recognition that we are approaching the economic limits of our production capabilities, and the resolution to realistically face up to this fact will tax the mental and moral fiber of producers. There is a lapse of 6 or 7 years between the time that the decision and the initial investment is made to bring a new grove into production and the time that any substantial returns are realized. This interval makes it doubly important that new plantings be based upon a careful examination of probable production costs and expected returns when the grove reaches bearing age. Otherwise, we may abruptly discover that there is a substantial acreage of oranges that will not return all production costs.

The recovery of the capital investment required to bring an orange grove into production can only be accomplished through the production and the sale of fruit. If a grower finds that he has marginal groves from which he cannot recover all of the costs, it does not follow that he will immediately cease production. Instead, he will continue to produce oranges as long as he can cover his direct production costs and recover any substantial share of the capital which he invested to bring the grove into production. He will do so because he will lose less money by producing oranges than he will by not producing. In effect, he will write off part of his invested capital and, in so doing, re-define his total costs.

The position of the grower will be the same if he attempts to sell his submarginal grove to someone else. If the grove is incapable of returning direct production costs and the initial capital outlay, he would be unable to recover his initial capital investment from a buyer who fully understood the economic situation. The seller would be forced to discount his capital investment by an amount sufficient to satisfy the buyer that he could not only recover the purchase price but realize a satisfactory return on his investment in the years ahead.

Overexpansion in the industry would inevitably lead to capital losses on the part of producers. Moreover, it would also create a supply of fruit which would compete with that from groves which represent sound investments and good economic judgment. In a sense, the industry would have to pay double for overexpansion—once in the form of capital losses, and again because of the price depressing effect of the added fruit which the overexpansion brought into the total supply.

Up to this point, the effect of a continuing increase in the production of oranges upon price has not been brought into the discussion. Price has been deliberately omitted because growers will ultimately produce up to the economic limits which have been previously defined and examined regardless of the price level for fruit. It is, however, a fundamental principle of economics that, in a stable demand situation, large crops must sell for fewer dollars and cents per box than a small crop. In recent years orange producers have had little opportunity to witness a stable demand situation.

The development, successful promotion, and near-phenomenal consumer acceptance of frozen concentrate resulted in a tremendous increase in the demand for Florida oranges. Within the short interval of 10 years, frozen concentrate has grown from an infant to a giant industry that used 52 million boxes of oranges during the 1956-57 season. This is enough to supply each person in the U. S. with a quantity of juice equivalent to that contained in about 25 pounds of fresh oranges. Considering the past rate at which the frozen concentrate industry has expanded, it is difficult to speculate upon the limits of its market potential. It is a certainty, however, that there are practical limits to the quantity of concentrate which people can be induced to consume.

The relatively recent development of marketing chilled juice may well afford equal possibilities for expanding the demand for oranges. During the past season nearly 5 million boxes were marketed in this form, and the prospects of it accounting for substantially larger volumes of fruit are exceptionally good. The future will, no doubt, bring still other products and marketing innovations that will expand the demand for oranges. It is important to recognize, though, that the effects of new products upon the demand for oranges are somewhat less than one might surmise by looking at the volume of fruit which they utilize. All of the increase in the consumption of frozen concentrate has not been in the form of expanded demand. The downward trend in the per-capita consumption of fresh fruit which has accompanied the rapid expansion of frozen concentrate serves to emphasize this point. In like manner, the frozen concentrate industry will probably feel the pressure of an increasing chilled juice market.

New products are not the only means by which the demand for oranges can be increased. Through advertising and promotional activities, the Citrus Commission and private firms continually strive to induce the population to consume more oranges. To the extent that these are successful, the demand may be increased sufficiently to forestall price declines which might otherwise

be required to move progressively larger crops.

Even the growth of the national population serves to expand the demand for oranges. Over the past 12 years the population has increased at an average annual rate of 2.6 million persons. If this absolute rate of increase continues, and we are successful in maintaing per-capita consumption rates at present levels, 1.4 million additional boxes of oranges will be absorbed each year by the increase in the number of consumers. On the basis of the average rate of increase in the size of the orange crop of 4.3 million boxes that we have had during the past 12 years, this would leave about 3 million boxes which must be absorbed by increasing the average consumption rate.

Price reductions are the most expedient, but the least desirable, method of inducing people to consume more oranges. New prolucts, marketing innovations, and merchandising and advertising programs are alternatives to the use of price reductions. However, the substitution of these for price reductions becomes progressively more difficult as supplies grow larger. It is rather difficult to continually induce consumers to spend a larger and larger share of their income for oranges. Somewhere in the future, it is realistic to anticipate some downward adjustment in price as necessary to cope with the problem of increasing-per-capita supplies. If we are successful in expanding the demand for oranges through the development of new products and the use of promotional programs, this adjustment will be quite gradual. If we are not, it will occur with somewhat greater rapidity. The downward drift of prices will meet the rising production costs on new groves, and at this point the orange industry will cease to expand.

To many this may seem to be a harsh analysis of the situation. Under conditions where anyone with the capital can enter into the production of oranges if he thinks it is a good investment, it is the only conclusion economic theory allows. That the production of oranges in the past few years has been a relatively profitable venture is an undeniable fact. It is also apparent that most everyone feels that it will continue to be profitable in the immediate future. One cannot explain the current prices at which orange groves are selling on the basis of either the cost of bringing them into production or the cost of replacement. The fact that prices are higher than either of these cries out that they have earned profits for the owner in the past and are expected to do so in the future. It is the capitalization of this anticipated earning power that makes prices higher than the actual or replacement costs. This disparity is irrefutable evidence that capital invested in orange groves has and is expected to continue to produce a good return. As long as this is true, production will continue to expand.

While current grove prices are high in relation to actual or replacement costs, they are not high enough to represent a capitalization of current earning rates. The discounting of current earning rates is evidence that neither current owners nor those with capital to invest feel that, in the long run, the incomes from orange groves will continue at the levels of the past few seasons. Orange producers need not regard this long-run outlook with despair.

There always have been and always will be some groves and some growers that will not make a profit producing oranges. There always have been and always will be some groves and growers that will make a profit producing oranges. In the 22 years that the Department of Agricultural Economics at the University of Florida has kept records on costs and returns from producing oranges, there has never been a year so bad but what some growers made money nor a year so good that none lost money.

The real difference between the present, the past, and the long run is that enough growers on enough groves will have difficulty making a profit to convince the industry as a whole that further expansion will not pay. This is the way a competitive economy works. It is the way it should work. Remember, expansion until the cost of production on the marginal grove approximates the selling price of oranges is the only way that producers individually and collectively can maximize their returns in a competitive situation. It is important and essential to the welfare of the industry that growers recognize the full truth of this idea, however, and that the future growth of orange production be based on the firm foundation of a continuing and realistic appraisal of the long-run economic situation. Only through such actions can the disasterous consequences of overproduction be averted. If this is done, there is no reason why the full development of the orange industry will not be an enjoyable and profitable experience.

Citrus Grove Caretakers

Production managers for Florida's great cooperative associations, big commercial citrus growing organizations, and grove caretakers for individual grove owners, play an important, indeed outstanding, part in the production of Florida's mammoth citrus crop. The know how and the intelligence with which that knowledge is applied means the difference between profit and loss to the grove owner.

Among this class of grove workers few, if any, are more widely known or more highly regarded than Charley Kime, production manager for Waverly Growers Cooperative, whose likeness appears on the front cover of this issue.

As vice-president for citrus of the Florida State Horticultural Society and as an active worker along all lines of citrus endeavor, he is widely known for his energetic and efficient service to the citrus industry of the State.

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Reports Of Our Field Men . . .

SOUTH POLK, HIGHLANDS, HARDEE, DeSOTO AND SARASOTA COUNTIES

C. R. Winfifield

Having just returned from my vacation it appears we have had some rather hot and dry weather. However the third week of August it has set into raining until we have gotten real wet. Mighty fine for most groves but has hit the vegetable grower who is trying to get ready to plant. Those that have set pepper and tomatoes will lose some if rain continues.

Citrus groves look fine and are getting good growths at intervals. They have a good color and in most cases are carrying good crops that have sized well. After this week's rain we will probably see some orange splits. The fruit appears to be a good quality and with some normal weather will probably reach maturity early.

Young trees have responded to moisture conditions and should be fed for the last time about Sept. 10th, so that growth can harden before cold weather.

HIGHLANDS AND POLK COUNTIES

J. K. Enzor, Jr., & R. E. Lassiter, Jr.

We are still very well pleased in this section with the rainfall which we have been receiving. It is most gratifying to see the new lease on life which the rains have given our groves this year.

Many of our growers have been applying dolomite or limestone where pH values are low. We feel that the importance of applying a soil amendment when the pH values are low cannot be too highly stressed.

With the use of Zineb the applications of sulfur sprays and dusts has been cut down considerably in this area. Growers should continue to check their groves for rust mite infestation. Rust mite infestations are low at the present, but an increasing trend is expected in September.

Growers should be applying the last application of young tree fertilizer for the year especially in the colder locations.

NORTH CENTRAL FLORIDA

V. E. Bourland

We are having very nice weather but have had some heavy rains with water standing in low places in groves. Most cover crops have been chopped and trees are looking good with good average crop of fruit, and growers are putting forth more effort to make fruit a better quality than in the past five years. Young trees have made a wonderful growth this year. Some early grapefruit being picked at the present time, this was a shock bloom caused from cold last winter.

Most all the packing houses are getting their equipment in shape for a big season, however no fruit has been sold, nor as yet any prices given.

EAST HILLSBOROUGH AND PASCO COUNTIES

E. A. McCartney

Vacations are over and we are checking groves, making plans for this fall application of fertilizer. Some splitting of fruit but not serious as yet. A few crops of Duncan and Marsh grapefruit have been sold for December picking.

A few buyers are checking on Hamlin oranges and no doubt some sales will be made soon. This is being written on August 28th and will not be out until about September 10th.

During July we secured soil samples from most groves in our territory and Dolomite limestone is being applied at one to two tons per acre, as needed. This is one material that has to be sold to most growers, as the tendency seems to be it is something they can put off, and do, as long as possible, which is a mistake. Although groves look good, and are in much better condition than they were 20 years ago when I went to work for Lyons Fertilizer Company, I can never forget the bronze and yellow leaves, especially on grapefruit in the territory I was given. I learned later the same condition prevailed all over the state, so if the pH and MGO is maintained at the proper balance in the soil and the right amount and right mixture of Lyons fertilizer is applied you can't miss having good results.

SOUTHWEST FLORIDA

Eaves Allison

The fall vegetable season is off to a good start at this time — Aug. 28th — with rows of field planted tomatoes up to a fine stand in the Palmetto-Ruskin area, and with rains from just about right to a little too heavy wetting them down. Some seed beds are in and in some cases with plants well up, to act as an ace-in-the-hole against the hurricane season with its prospective attending floods. Cabbage plants are shining in the seed beds and other truck crops are going in the ground, and all in all this looks like it is going to be a good fall deal.

Citrus is sizing up very well and tree growth is vigorous and healthy, especially where that good Lyons fertilizer is being used! Cover crops are heavy and pasture grasses are in many cases getting ahead of the cows that are there to eat them.

So far rust mites have appeared to win the race with Zineb applications — altho it is too early yet to be sure, and the same may not be so in all cases.

As always, the hope for good citrus prices stands first in the minds of the growers.

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Uncle Bill Says:

They has been a lot of conversation goin' the rounds lately 'bout the need for Florida citrus that goes to market in the form of fresh fruit, bein' the highest Quality and the Finest appearin' fruit this state can produce . . . there is a lot of sense in that fer they ain't no use in kiddin' ourselves, the attitude of the consumers is the most important factor in the sale of our fruit . . . even if the taste and texture of the fruit is good if it don't look nice and clean and bright on the outside it's goin' to be harder to sell than fruit which may be inferior inside the skin but shines like a gold dollar on the outside.

One thing is fer sure they ain't no place, nowhere, that can produce finer or better quality fruit than we can raise right here in our home state . . . but we got to admit that we've still got some competition and they ain't no sense in us makin' it easier fer that competition to have a more saleable product in the market.

'Course the outside appearance of oranges and grapefruit which is processed fer cannin' or processin' don't cut no ice, so long as the taste is good . . . but the right sort of growin' and packin' and preparin' fer market of our fresh fruit will enable any Florida grower who really puts the effort into it to raise the best citrus in the world . . . the best tastin' and the best lookin'.

Any way you figger it puttin' the very Finest Quality Fruit and the very Best Lookin' Fruit on the market will pay off . . . and after all that's what we all want, fer we don't know nobody who wants to raise citrus fruit jist fer the fun of raisin' it.

Personally we ain't had much trouble with bad lookin' fruit and our own fruit, internally, has always measured up with the very best 'cause for a long, long time we've been using Lyons Fertilizers which has lived up to the Lyons slogan that Lyons Fertilizers Produce Maximum Crops of Finest Quality.

Mutual President Lauds State Legislative Program

Vernon L. Conner, President of Florida Citrus Mutual, said at the annual Citrus Growers Institute at Camp McQuarrie that the legislative program of the Florida citrus industry is on a sound basis which should make the industry better and more profitable for growers and all others who derive their livelihood from the industry.

Speaking on the subject, "New Citrus Legislation," Conner said he was proud that Florida Citrus Mutual has taken the lead along with other industry groups in working for further citrus legislation.

"Because this is a growing industry," he said, "there is a definite need for its legislative controls to be changed from time to time to cope with changing conditions."

"It is noteworthy that all of the citrus bills presented at the recent legislative session were enacted into law with only minor changes from the final proposals," he continued. "This is a record that is not achieved without careful consideration and realistic planning."

Conner listed the legislation passed by the Florida Legislature during the 1957 Session as:

1. A bill to increase the excise tax on oranges from the former three cents to five cents per box. He said this action was taken to permit an expansion of the Florida Citrus Commission's program and activities to assist the industry in marketing substantially larger crops expected in the next few years. Conner said that the additional revenue arising from the increase in production available for advertising last year represented about one half of one per cent of the value of the crop.

2. A bill to extend the increased juice content requirement of grapefruit. Conner said this law resulted in a tremendous improvement in the quality of grapefruit shipped during the early part of the past two seasons. Conner said results from passage of this law two years ago led to the recently passed bill requiring an additional five percent increase to the beginning of March rather than through November 15 as stated in the previous law.

3. Quality. "We cannot get away from this word," he said. Another bill carrying out this theme deals with a change in the solids-acids ratio of Temple oranges and is designed to prevent the shipment of that or sour fruit early in the shipping season.

VERNON L. CONNER
PRESIDENT FLORIDA CITRUS MUTUAL

4. Temple Orange coloring. Conner said that based upon favorable results of experimental coloring of Temple oranges, the industry proposed a bill to permit the coloring of Temples on the same basis as round oranges without restrictions.

"When this bill came to the legislative committee in Tallahassee, it was considered desirable to throw certain safeguards around it and to continue the coloring of Temples on an experimental basis but to increase the maximum quantity that could be treated from 100,000 boxes to 300,000 boxes," he said.

5. Tangelos. Conner said Tangelos were brought under the citrus code for the first time in 1955. "However," he said, "the bill worked hardships on some in meeting maturity requirements. To correct these, certain revisions were made by this Legislature while still retaining prior provisions designed to provide a product that will meet with good consumer acceptance."

6. Chilled Orange Juice. Conner said one of the most important changes in the history of the industry has been in chilled orange juice.

"Perhaps few of us realize this past season, one tenth of all the oranges grown in Florida were marketed in this new, important outlet," he said.

"Certain bills were enacted by this past Legislature which strengthened the power of the Florida Citrus Commission to regulate and to control the production of this new product in order to prevent fraud and deception and thereby to protect the good name and reputation of Florida citrus," he said.

7. "Bonded Shipper." Conner said that gift package shippers and roadside stand operators in the State play an important part in merchandising our citrus crops.

"These folks are our front line ambassadors," he said. "Unfortunately, a few have indulged in unethical practices by incorrectly displaying the words, "Bonded Shipper." This had been misleading. To correct the situation, the legislature enacted a bill making it unlawful to use the term unless the person has actually posted a performance bond to protect the persons to whom he sells fruit."

8. Frozen Concentrated Orange Juice. "We at Mutual subscribe to the theory that we must constantly strive to improve our products and to produce them to the highest possible standards. We were cosponsors for the bill passed by the Legislature which gives the Commission power after public hearing to promulgate rules and regulations covering certain phases of the production of frozen concentrated orange juice at levels higher than the minimum standards required under the Florida citrus code. We believe the net affect of this bill will be an improved quality product. We cannot afford to neglect the quality factors of this product if we are to continue the expansion of markets so necessary for the movement of our rapidly expanding citrus products," he concluded.

Surveys Released For Three More Counties

The Florida Citrus Commission today released results of the State Plant Board's citrus survey in Pasco, Hernando and Citrus, bringing to 27 the number of citrus belt counties to be covered in the Board's survey project started early last year.

In cooperation with the State Plant Board, the Citrus Commission, Florida Citrus Mutual, the U. S. and Florida Departments of Agriculture, and the Florida Agricultural Experiment Station are participating in the survey which will eventually include 36 counties in the Florida citrus belt.

Pasco leads the latest three-county count with 1,981,538 orange trees and 203,590 grapefruit trees in commercial groves in the county. Also listed in the report was a total of 42,065 Mandarin variety trees; 73,729 Hybrid trees of which 65,844 were Temples; 12,970 trees bearing Kumquats and other miscellaneous varieties; and 20,312 acid fruit trees of which 14,136 were Lime, 5,024 were Sour Orange, and the balance Lemon trees.

Hernando County orange trees in commercial groves number 464,414 while grapefruit trees total 35,864. The report also listed 64,937 bearings trees of the Mandarin type; 5,556 trees bearing Temple oranges; and 729 acid bearing fruit trees.

Citrus, the smallest producer of the three, has 96,067 orange trees and 7,982 grapefruit trees in commercial groves. The report noted that there were 3,084 of Mandarin type; 5,621 trees bearing Tangelos and Temple oranges; 684 acid fruit trees; and 427 miscellaneous fruit trees.

The report stated that Pasco has a total net commercial acreage in citrus of 32,768 acres; has 5,093 trees in abandoned groves; and 108,172 diiseased trees throughout the county.

Hernando County has a net commercial citrus acreage of 8,080 acres; has 2,937 trees in abandoned groves; and 30,931 trees diseased in the county.

In Citrus County, net commercial acreage totals 1,757; there are 17,234 trees in the diseased category; and 1,192 trees in abandoned groves.

Other counties thus far included in the project are Polk, Lake, Pinellas, Highlands, Lee, Hendry, Collier, Broward, Dade, Orange, Hardee, Martin, Sarasota, DeSoto, St. Lucie, Indian River, Seminole, Putnam, Palm Beach, Charlotte, Volusia, Manatee, Alachua and Okeechobee counties. Including today's report on the three counties, the combined counties surveyed indicate a total of 37,557,715 trees, of which 25,112,579 are bearing commercial oranges.

Net citrus acreage for the 27 counties was placed at 491,423 acres; 1,678,778 trees were listed in the diseased category; and 568,307 trees in abandoned groves.

The citrus tree count, which has been underway since early last year, will include an estimated 43,000,000 citrus trees when completed.

USDA Amends Standards On Oranges, Tangelos

Amended U. S. Standards for Florida oranges and tangelos will become effective September 21, 1957, the U. S. Department of Agriculture has announced.

The minimum diameter specified for 175-176 size oranges is being changed from 2-14/16 inches to 2-13/16 inches at the request of the Florida orange industry. In addition, the method of juice extraction is changed to permit the use of cheesecloth in lieu of a specific grade of gauze which no longer is available.

The amended standards, which apply to oranges and tangelos grown in Florida, supersede those in effect since October 14, 1955.

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The recommendations of the Florida Citrus Experiment Station at Lake Alfred, stress the need for large application of magnesium for Citrus in soluble form and state that it is usually applied as a Sulphate.

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8c Of U.S. Dollar For Transportation

For every dollar spent in 1955 by consumers for food, 8 cents went for transportation, according to a report issued by the U. S. Department of Agriculture. In comparison, transportation cost consumers less than 6 cents of their food dollar in 1954.

The proportion of the food dollar that goes to pay for transportation varies, of course, from one kind of food to another and from place to place, and also is greater for long hauls to market than for short ones. Lettuce shipped from Arizona points in June 1955 cost 23 1/3 cents per retail dollar for transportation to Chicago and 33 cents per retail dollar to New York, the marketing researchers found.

Transportation firms try to cut down the difference between the rates charged for transporting a commodity that is brought into a market from several sources of supply. For example, the rate charged for shipping tomatoes from California to Boston is only about half again as much as the rate from Florida, although the distance is more than twice as great. Hence, the carriers get freight to haul which they might otherwise not get, distant producers are able to compete, and the supply everywhere is more ample and varied.

The report shows that the hauler gets a smaller share of the retail price of processed foods than of fresh products. Actually, the rates for moving processed foods are higher than rates for moving the same products as they come from the farm. But added processing causes a bigger percentage rise in the processing bill than in the transportation bill. In November 1955, transportation absorbed 16 cents per retail dollar spent for fresh Florida oranges in New York, 12 cents for single strength orange juice, and only 5 cents for frozen orange juice concentrate.

There are two things some people never seem to get — all they want and what they deserve.

Classified Ads

SUPERIOR CITRUS TREES available for Fall 1957 and Spring 1958 planting: Valencias, Hamlins, Pineapples, Orlandos and other varieties. Write for quotation and your FREE copy of "Care of Young Citrus Trees." WARD'S NURSERY, Box 846, Avon Park, Florida. Phone GLendale 2-7541.

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